CLAIMS

1. A process for making a circuit board comprising the following steps of:

half-etching a metal layer formed on an insulating substrate by means of a first masking which is positioned on an upper surface of the metal layer;

applying a positive liquid resist on the half-etched metal layer from an upper side of the first masking;

exposing the positive liquid resist with light from the upper side of the first masking and developing the positive liquid resist in such a manner that a part of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern on the insulating substrate; and

removing the first masking and the second masking from the metal layer.

2. A process as set forth in claim 1, wherein, in the step of exposing the positive liquid resist with light from the upper side of the first masking, a parallel light is used.

3. A process as set forth in claim 1, wherein the insulating substrate is flexible so that a tape automated bonding (TAB) type circuit board is thus made.

4. A process for making a circuit board comprising the following steps of:

forming a first metal layer on an insulating substrate and forming a second metal layer on the first metal layer, the second metal layer having smaller thickness than that of the first metal layer;

applying a first resist on the second metal layer and patterning the first resist to provide it with openings;

etching selectively only the second metal layer through the openings of the patterned second metal layer;

half-etching the first metal layer by means of a first masking composed of the first resist and the second metal layer located just under the first resist;

applying a positive liquid second resist on the half-etched first metal layer from an upper side of the first masking;

exposing the positive liquid resist with light from the upper side of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern on the insulating substrate; and

removing the first resist and the second resist.

5. A process as set forth in claim 4, wherein, in the step of exposing the positive liquid second resist with light from the upper side of the first masking, a parallel light is used.

6. A process as set forth in claim 4, wherein the insulating substrate is flexible so that a tape automated bonding (TAB) type circuit board is thus made.

7. A process as set forth in claim 4, wherein the second metal layer is removed by etching after the first resist and the second resist are removed.

8. A process as set forth in claim 4, wherein the step of removing the first resist and the second resist comprises the following sub-steps of: first peeling only the second resist and then removing the second metal layer by etching to remove the first resist.

9. A process for making a circuit board comprising the following steps of:

forming a first metal layer on an insulating substrate and forming a second metal layer on the first metal layer, the second metal layer having smaller thickness than that of the first metal layer;

applying a first resist on the second metal layer and patterning the first resist to provide with openings;

etching selectively only the second metal layer through the openings of the patterned second metal layer;

half-etching the first metal layer by means of a first masking composed of the first resist and the second metal layer located just under the first resist;

applying a permanent-type positive liquid second resist on the half-etched first metal layer from an upper side of the first masking;

exposing the positive liquid resist with light from the upper side of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern on the insulating substrate; and

removing the first resist and the permanent-type positive liquid second resist, except for a part of the second resist protected to be unexposed and undeveloped.

10. A process as set forth in claim 9, wherein, in a step of removing the first resist and the second resist, a solution with which the first resist reacts, but the second resist does not react, is used.

11. A process for making a lead frame comprising the following steps of:

half-etching a metal plate from respective sides thereof by means of first maskings which are positioned on respective surfaces of the metal plate;

applying positive liquid resist on the half-etched plate from respective sides of the first maskings;

exposing the positive liquid resist with light from respective sides of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal layer by means of second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern on the insulating substrate; and

removing the first masking and the second masking from the metal layer.

12. A process as set forth in claim 11, wherein, in the step of exposing the positive liquid resist with light from the upper and lower sides of the respective first maskings, a parallel light is used.

13. A process for making a lead frame comprising the following steps of:

forming thin, second metal layers on respective surfaces of a metal plate;

applying first resist on the second metal layers and patterning the first resist to provide with openings;

etching selectively only the second metal layers through the openings of the patterned second metal layers;

half-etching the metal plate by means of first maskings composed of the first resist and the second metal layers located just under the first resists;

applying positive liquid second resist on the half-etched first metal layer from respective sides of the first maskings;

exposing the positive liquid resist with light from respective sides of the first maskings and developing the positive liquid resist in such a manner that portions of the positive liquid resist located under the first maskings are protected to be unexposed and undeveloped;

etching again the metal plate by means of second maskings each composed of the first masking and the protected positive liquid resist to form a conductive pattern; and

removing the first resist and the second resist.

14. A process as set forth in claim 13, wherein, in the step of exposing the positive liquid second resist with light from the respective sides of the first maskings, parallel light is used.

15. A process as set forth in claim 13, wherein the second metal layers are removed by etching after the first resists and second resists are removed.

16. A process as set forth in claim 13, wherein the step of removing the first resist and the second resist comprises the following sub-steps of: first peeling only the second resist and then removing the second metal layer by etching to remove the first resist.

17. A process for forming a fine pattern on a metal plate comprising the following steps of:

half-etching a metal plate from one or respective side thereof by means of first masking which is positioned on one or a respective surface of the metal plate;

applying positive liquid resist on the half-etched metal plate from one or a respective side of the first masking;

exposing the positive liquid resist with

light from one or respective sides of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal plate from one or a respective side thereof by means of second masking composed of the first masking and the protected positive liquid resist; and

removing the first masking and the second masking from the metal plate.

18. A process for making a circuit board comprising the following steps of:

coating a metal layer formed on an insulating substrate with a first resist and patterning the first resist;

forming light-blocking film on the patterned first resist;

half-etching the metal layer by means of a first masking composed of the first resist and the light-blocking film;

applying a positive liquid resist on the half-etched metal layer from an upper side of the first masking;

exposing the positive liquid resist with light from the upper side of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern on the insulating substrate; and

removing the first masking and the second masking from the conductive pattern on the insulating substrate formed on the insulating substrate.

19. A process as set forth in claim 18, wherein, in the step of exposing the positive liquid resist with light from the upper side of the first masking, a parallel light is used.

20. A process for making a lead frame comprising the following steps of:

coating respective surfaces of a metal plate with first resist and patterning the first resist;

forming light-block film on the patterned first resist;

half-etching the metal plate from respective sides thereof by means of first maskings each composed of the first resist and the light-block film;

applying positive liquid resist on the half-etched plate from respective sides of the first maskings;

exposing the positive liquid resist with light from respective sides of the first maskings and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal plate from respective sides thereof by means of second maskings each composed of the first masking and the protected positive liquid resist; and

removing the first masking and the second masking from the metal plate.

21. A process as set forth in claim 20, wherein, in the step of exposing the positive liquid resist with light from the upper and lower sides of the respective first maskings, a parallel light is used.

22. A process for forming a fine pattern on a metal plate comprising the following steps of:

coating one or respective surfaces of a metal plate with first resist and patterning the first resist;

forming light-block film on the patterned first resist;

half-etching the metal plate from one or respective side thereof by means of first masking composed of composed of the first resist and the light-block film;

applying positive liquid resist on the half-etched metal plate from one or respective side of the first masking;

exposing the positive liquid resist with light from one or respective sides of the first masking and developing the positive liquid resist in such a manner that a portion of the positive liquid resist located under the first masking is protected to be unexposed and undeveloped;

etching again the metal plate from one or respective side thereof by means of second masking composed of the first masking and the protected positive liquid resist; and

removing the first masking and the second masking from the metal plate.